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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,865	09/30/2003	Seok-Jun Won	9898-305	7630

7590 06/08/2005

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT PAPER NUMBER

2811

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/676,865	Applicant(s) WON, SEOK-JUN	
	Examiner Steven Loke	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/8/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 7-8, the phrase "a bottom part of the concave upper electrode larger than the lower electrode" is unclear as to what dimension is being used to compare the bottom part of the concave upper electrode and the lower electrode. Fig. 4 discloses a length of a bottom part of the concave upper electrode is larger than that of the lower electrode.

Claim 5, line 15, the phrase "the concave upper electrode is larger than the lower electrode" is unclear as to what dimension is being used to compare the concave upper electrode and the lower electrode. Fig. 4 discloses a length of a bottom part of the concave upper electrode is larger than that of the lower electrode.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Nakajima et al.

In regards to claim 1, Nakajima et al. show all the elements of the claimed invention in fig. 1. It is a flat-type capacitor, comprising: a lower interconnection [8a] on a

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predetermined portion of a semiconductor substrate [1]; a lower electrode (a bottom portion of the capacitor lower electrode) [21] that has a flat shape, the lower electrode electrically coupled to the lower interconnection [8a], the lower interconnection [8a] disposed below the lower electrode [21]; a concave dielectric layer [25b] formed on the lower electrode [21]; a concave upper electrode [26] formed on the dielectric layer; a length of a bottom part of the concave upper electrode is larger than a length of the lower electrode; a first upper interconnection [12] being electrically coupled to the lower interconnection when the memory transistor is in an on-state; and a second upper interconnection [13] that is coupled to the first upper interconnection.

In regards to claim 2, Nakajima et al. further disclose the lower electrode [21] is positioned between edges of the concave upper electrode [26].

In regards to claim 3, Nakajima et al. further disclose the lower electrode (a top portion of the capacitor lower electrode) [24] and the upper electrode [26] are composed of TiN.

In regards to claim 4, Nakajima et al. further disclose the dielectric layer [25b] is composed of Ta₂O₅.

4. Applicant's arguments filed 4/1/05 have been fully considered but they are not persuasive.

It is urged, in page 10 of the remarks, that Nakajima's lower electrode [24] does not have a flat shape. Also contrary to claim 1, a bottom part of Nakajima's upper electrode [26] is not larger than Nakajima's lower electrode [24]. However, as mentioned in the rejection, Nakajima et al.'s disclose a lower electrode (a bottom portion of the capacitor

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lower electrode) [21] has a flat shape and a length of a bottom part of the concave upper electrode [26] is larger than a length of the lower electrode (a bottom portion of the capacitor lower electrode) [21].

5. Claim 5 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 8:20 am to 5:50 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 3, 2005

Steven Loke
Primary Examiner

